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JOB DIMENSION ANALYSIS OF
NAVAL COMMUNICATIONS MANAGERS

Walter Charles Mattox

NAVAL POSTGRADUATE SCHOOL

Monterey, California



THESIS

JOB DIMENSION ANALYSIS
OF
NAVAL COMMUNICATIONS MANAGERS

by

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March 1973

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Job Dimension Analysis
of
Naval Communications Managers

by

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Lieutenant, United States Navy
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ABSTRACT

A study of Naval Officers assigned to Communications Management billets was conducted to determine job requirements of those billets. The "executive position description questionnaire" developed by Hemphill [1959] was used for the study.

Analyses of data from 114 respondents to the questionnaire were conducted. Respondents were grouped into seven categories according to job type, and a mean score was computed for each of Hemphill's dimensions. Cluster analysis was used to develop six dissimilar clusters maximizing similarities among respondents within clusters.

Cluster analyses revealed that jobs did not cluster along expected lines, such as P-Code vs non-P-Code. The only a priori distinction clearly reflected in the job clusters was line-function vs staff-function. A comparison of civilian executives to Communications Managers was also conducted. In general, the Communications Managers' jobs were below the 50th percentile on the civilian executive norms for these dimensions.

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I. INTRODUCTION

Within the Navy there are a large number of jobs which require executives to fill them. Each has its own title and position within an organizational hierarchy, and each has its specific goals and objectives. None of this, however, tells very much about what is called for in the way of managerial behavior when attempting to meet the objectives of the job.

There are certain fundamental functions which all executive managers must perform. As stated by Koontz and O'Donnell [1972] these consist of planning, organizing, staffing, directing and controlling the activities and resources of the organization of which the executive is a part. Describing how executives perform these functions is particularly difficult because the jobs they perform change from one setting to another. According to Dunnette [1966] managerial jobs are subject to time-determined changes: the things he does may depend upon how far he is into his tour or mission. Next, there are person determined changes: the same job may be accomplished in different ways by different executives. Finally, they are often subject to situation-determined changes. They may differ according to the environment in which they are performed, e.g., tactical vs non-tactical.

Campbell, et al [1970], probably stated the need best, "Ideally, it would be nice to be able to describe any managerial job with a small number of measures, just as a person can be described by referring to measurements such as height, weight, sex, etc. Because managerial jobs change so rapidly and differ greatly, it is difficult to determine these measurements and quantify them in any way. What is needed are fundamental

dimensions along which these differences can be determined and a way to measure them. In order to develop these dimensions, which will be applicable to managerial jobs, as much as possible must be learned about what it is managers actually do in accomplishing their jobs... That is, how they go about getting their job done."

By describing executive jobs in the above manner, several benefits become readily apparent. First, better executive training techniques and programs could be developed. Second, the area of an executive's activity and responsibility could be better defined. Third, career patterns for executive development could be determined and established. Finally, better job performance evaluations, e.g., officer fitness reports, could be made.

Job analysis methods are the means by which executive positions can be described. The next section briefly reviews several of the more common job analysis methods.

II. METHODS OF JOB ANALYSIS

Several methods of job analysis have been developed and tried. These methods fall into two categories depending on whether the jobs are assumed to be static (job-centered method) or dynamic in nature (behavior-centered method).

A. JOB-CENTERED METHODOLOGY

The job-centered methods assume that a job is relatively static-- that is does not change over a limited period of time or its content depends much upon the job incumbent, and so on. Two main methods fall into this category.

1. Narrative Description

The general aim of this method as explained by Dunnette [1966] is to describe the nature and scope of jobs as they are currently constructed with no consideration of the person or persons performing the job. The gathering of facts about the job is done through direct observation, interviewing the job incumbents, and through reviewing other sources of job information.

2. Position Guides and Task Specifications

Dunnette [1966] stated that this method is designed to provide general outlines and specific details of ideal job content. Position guides could be developed to clarify broad duties of managerial jobs whereas task specifications would give detailed step-by-step procedures to follow in performing certain tasks.

B. BEHAVIOR CENTERED METHODOLOGY

The behavior-centered methods, also covered by Dunnette [1966], look more at the dynamic nature of a job--attempting to describe the job in terms of those behaviors necessary for the successful performance of that job.

1. Direct Observation and Behavior Recording

This method requires the recording of behavior of a job incumbent as he performs his daily tasks. The reporters of these behaviors often include the persons themselves as well as persons surrounding them in their work setting--their secretaries, personal assistants, telephone operators, and others who are trained in recording their observations on checklists and questionnaires designed for that purpose. A study conducted by Carlson [1951] reveals some executive actions which may be recorded by the reporters, (1) the site (inside or outside the firm, in

office or out, at home, etc.), (2) contact with institutions or persons, (3) methods of communication (written or oral, telephone, observational, etc.), (4) nature of the issue handled, and (5) kind of action taken.

2. Behavior Sampling

This method described by Campbell, et al [1970] is similar to the direct observation and behavior recording method except, rather than observing and recording all job behavior episodes, momentary observations of executive job behaviors are recorded randomly over a period of time. One advantage of this method is that it allows for time sampling procedures for studying managers jobs without having to record on a continuous basis.

As stated by Campbell, et al [1970], observers in both of these methods obtain records of managerial job behavior in natural surroundings and with as little intervention as possible. However, both methods suffer from being strictly descriptive at the expense of developing more general content categories differentiating between more and less important aspects of managerial behavior. The goal of obtaining complete and exhaustive observational accounts has forced too much attention on record keeping and classification, the results being that a great deal of knowledge about the job behavior of a few executives has been obtained, and not much has been learned about the general dimensions constituting the job behavior of many executives.

3. Critical Incidents Method

This method, developed by Flanagan [1954], is one of the best techniques for sampling many jobs and for focusing on the more important aspects of managerial behavior. In order to develop a new and more precise technique for defining job requirements, Flanagan developed the

concept of critical requirements. The critical requirements of a job or activity are those that are crucial in the sense that they have been frequently observed to make the difference between success and failure in that job. The method of critical incidents was developed in order to determine the critical requirements of a job. This method provides a relatively precise and comprehensive definition of effectiveness on a job in terms of what people do on that job. The critical incidents are reports by qualified observers on things executives did which were especially effective or ineffective in accomplishing important parts of their jobs. Reported incidents are actual behavioral accounts, recorded stories or anecdotes on how an executive performed during a particular phase of his job. After large numbers of incidents have been collected they may be abstracted and categorized to form a composite picture of job essentials which, in turn, form a starting point for developing checklists of tasks regarded as crucial to the job performed.

The next section of this thesis turns to describing the job analysis method chosen for use in this study.

III. METHOD USED: HEMPHILL'S EXECUTIVE POSITION DESCRIPTION

Hemphill [1959] set out to develop concepts with which to better describe the work of executives in their positions. The term "positions" referred to the more or less well defined set of expectations which apply to the work of an individual within the organization.

The first step in his study was the development of a 575 item Executive Position Description questionnaire. The items were determined from a review of approximately 1500 position elements. These elements were obtained from (1) literature on the nature of executive work, (2)

interviews with executives, and (3) examination of samples of executive position descriptions. The questionnaire was divided into four parts-- 239 items referring to position activities, 189 items referring to concerns or responsibilities, 84 items referring to demands or restrictions, and 63 items listed as miscellaneous or other characteristics. The questionnaire was then reviewed by a number of executives, from different companies, with the intent that they would add items as they thought necessary. None was added and the questionnaire remained at 575 items (see Appendix A for examples).

The questionnaire was given to executives in five companies. Each of the companies were subdivided into three levels and the jobs in each covered five functional areas. From 17 to 20 executives in each company answered the questionnaire with a total of 93 questionnaires being completed.

The three position levels and number of executives selected for each level were¹:

Level No. 1 "Upper Management" (24 positions)

Consisted of: Vice Presidents; Assistant Vice Presidents; Division Managers; General Managers; Comptrollers; etc. Their positions being within the upper three echelons of management.

Level No. 2 "Middle Management" (48 positions)

Consisted of: Plant Manager; Plant Superintendent; Operations Manager, Research Manager; Director, Quality Control, etc. These positions are at or above the third level of supervision.

Level No. 3 "Beginning Management" (21 positions)

Consisted of: General Supervisor; Head Supervisor;

¹ These descriptions are from Hemphill, J.D., Dimensions of Executive Positions: A Study of the Basic Characteristics of the Positions of Ninety-three Business Executives, Educational Testing Service, 1959.

Purchasing Agent; General Foreman; etc. These positions are at the second level of supervision.

The five functional areas were:

Area A Research and Development (11 positions)

Research, product development, consultant engineering, product planning, customer research.

Area B Sales (24 positions)

Sales, advertising, distribution promotion, market planning, etc.

Area C Manufacturing (26 positions)

Production, purchasing, plant operations, works engineering, quality control, transportation, traffic.

Area D General Administration (22 positions)

Accounting, data processing, legal information service, treasury, payroll, taxes, auditor, finance, banking, patents, office procedures.

Area E Industrial Relations (10 positions)

Labor relations, wage and salary administrations, employee benefits, training, personnel services, management development, recreation, college recruitment employment.

The procedures employed in the analysis of the questionnaire data consisted of five steps:

1. Questionnaire responses were punched and the frequency distributions for each item were computed.
2. Product moment correlation coefficients between each of the 4278 pairs of the 93 positions were computed. The correlation was on the 575 items, and the response range "0" through "7" was used in computation of the coefficients.
3. The 93 positions were divided into two batteries according to their function classification. Battery 1 consisting of the Research and Development, Manufacturing, and Industrial Relations positions. Battery 2 consisting of the Sales and General Administration positions. A factor analysis was then conducted with the correlations between the jobs in Battery 1 and Battery 2. Correlations between jobs within the same battery were not used in the factor analysis.

4. The unrotated factor loading for both Battery 1 and Battery 2 were rotated for simple structure.
5. Determination of a set of weights for each rotated factor and for each battery separately. These weights, when applied to responses to the 575 items would best predict the factor loading of a new position. The weights were also used to develop scoring keys and in the interpretation and norming of the factors.

By using correlation and factor analysis methods, Hemphill was able to identify clusters or groupings of jobs which were similar to one another but different from those in other clusters. Ten different job clusters or groupings were determined which reflected fundamental dimensions for describing any executive position.

The ten dimensions of executive positions Hemphill determined were²:

A. Providing a staff service in nonoperational areas.

This dimension of an executive position indicates that the incumbent renders various staff services to superiors. These services may be in the areas of personnel, administrative procedures, or special projects. The services consist of gathering information, briefing superiors, checking statements, verifying facts, and making recommendations. Incumbents of positions that measure high on this dimension tend not to be engaged in activities and/or to be concerned with the more directly operational areas of the business, such as production of physical products, inventories, budgets, and cost control.

B. Supervision of work.

This dimension indicates that the incumbent plans, organizes, and controls the work of others. His activities entail direct contact with workers and with machines. He is concerned with the efficient use of equipment, the motivation of subordinates, efficiency of operation, and the maintenance of a work force. The concerns covered by this dimension are restricted to getting work done efficiently. The incumbent is not concerned directly with market trends, new business, sales objectives, forecasting, or improvements in products.

² The following ten dimensions are from Hemphill's Dimensions of Executive Positions: A Study of the Basic Characteristics of the Positions of Ninety-three Business Executives, Educational Testing Service, 1959.

C. Internal business control.

This dimension indicates that the manager's activities and concerns are in the areas of cost reduction, maintenance of proper inventories, preparation of budgets, justification of capital expenditures, determination of goals, definition of supervisory responsibilities, payment of salaries, and enforcement of regulations. This dimension is also indicative of the fact that the incumbent tends not to represent the company, meet the public, work with customers, or get involved in details. His position places emphasis on the technical and routine application of various types of business controls.

D. Technical aspects of products and markets.

This dimension of an executive position has to do with activities and concerns in technical areas related to products, markets, and customers. The incumbent is concerned with the development of new business, activities of competitors, and changes in demand for products or services. He maintains contacts with customers; he consolidates and analyzes data; he generally assists salesmen with important accounts. He tends not to be concerned with personnel problems or industrial relations. He has less than the usual restrictions on personal behavior.

E. Human, community, and social affairs.

This dimension is indicative of a requirement to be effective in working with others. The incumbent is concerned with the goodwill of the company in the community, maintaining the respect of important persons, speaking before the public, and "sizing up" people. He is involved in nominating key personnel for promotion, appraising performance, and selecting managers. His job requires that he participate in community affairs, belong to clubs, and be active in civic organizations. His activities tend to keep him from many economic matters related to the business.

F. Long-range planning.

This dimension refers to systematic long-range thinking and planning. The concerns of the incumbent are broad and are oriented toward the future of the company. These concerns extend to industrial relations, development of management, long-range objectives of the organization, solvency of the company, pilot projects, the business activities that the company should engage in, existing or proposed legislation that might affect the company, and the evaluation of new ideas. The incumbent tends not to get involved in routines or details and tends to be free from direct concern with activities of subordinates.

G. Exercise of broad power and authority.

This dimension indicates that the executive exercises broad power and has final authority in a number of areas. He visits the major units of the company each year, makes recommendations on very important matters, keeps informed about the company's performance, makes use of staff people, and interprets policy. He is concerned with the relationship with unions, capital expenditures, and the long-range solvency of the company. He has unusual freedom of personal action and his position carries very high status.

H. Business reputation.

This dimension indicates a general responsibility for the reputation of the company's products or services. The manager's concerns extend broadly in either or both of two major directions--product quality and/or public relations. He deals with product design, quality, product improvement, complaints concerning products or services, delivery schedules, and the general goodwill of the company. The position makes stringent demands on his personal behavior, since deviations might reflect on the company's reputation. The position carries high status and the incumbent tends not to get involved in the details of making reports, consulting, or data analysis.

I. Personal demands.

This dimension of an executive position indicates stringent demands on the personal behavior of the incumbent. The incumbent shows an unusually high concern with the propriety of his behavior, especially in his interactions with superiors. He shows less concern with maintaining the general goodwill or reputation of his company in the community. He senses obligations to conduct himself according to the stereotype of the conservative businessman. His activities are most likely to be at the highest staff levels and to involve analysis of operations, setting objectives, and participating in decisions that are made at high levels.

J. Preservation of assets.

This dimension indicates activities and concerns directly associated with the preservation of the physical assets of the company. The incumbent's concerns include capital expenditures, expenditures of large sums in routine operations, taxes, preservation of assets, and the loss of company money. He has the authority to sign documents that obligate the company. He tends not to be concerned with industrial relations or technical operations.

The final step in the study was the reduction of the questionnaire to 191 items and the development of a dimension scoring method. By

determining correlation coefficients between Battery 1 and Battery 2 positions it was possible to develop a common scoring procedure which could be applied to both sets of positions. It was also possible to simplify scoring by limiting weighting values to either plus or minus 1.00.

Hemphill was able to determine from the 93 executives the extent, upper, middle and beginning management fill the ten dimensions applied to each of their respective positions. TABLE I shows the proportion of the jobs, in each management level, which scored high on each dimension.

Examination of TABLE I revealed that the greatest number of upper management positions scored high in Business Control (Dimension C), Human Affairs (Dimension E), Planning (Dimension F), and Broad Power (Dimension G). As a comparison, the greatest number of beginning management positions scored high in Providing Staff Services (Dimension A), Supervision of Work (Dimension B), Business Control (Dimension C), Technical Products and Markets (Dimension D), and Business Reputation (Dimension H). The job titles which make up the upper and beginning levels of management have previously been discussed on pages 11 and 12.

As stated by Campbell, et al [1970], through Hemphill's study, we are now able to determine ten specific dimensions of an executive job. Although these dimensions do not describe the job in total over all time periods, they do provide valuable insight into the requirements of an executive job. It provides a needed tool for those persons with the responsibility for managing and developing an organization's managerial talent by replacing guesswork with dependable information about job characteristics.

TABLE I

Proportion of Positions (as originally classified by level and by Function) Which Measure Relatively High on Each of The Ten Dimensions¹

LEVEL	DIMENSIONS ²									
	A	B	C	D	E	F	G	H	I	J
Upper Management	.46	.21	.71	.29	.55	.63	.55	.46	.46	.42
Middle Management	.54	.54	.60	.54	.41	.47	.55	.39	.23	.31
Beginning Management	.90	.62	.62	.71	.19	.43	.14	.52	.19	.19
FUNCTION										
R and D	.91	.54	.55	.91	.27	.82	.00	.54	.27	.18
Sales	.42	.16	.79	.62	.54	.29	.50	.21	.17	.21
General Administration	.68	.54	.67	.55	.18	.49	.36	.27	.27	.32
Manufacturing	.43	.54	.81	.31	.39	.46	.42	.62	.27	.39
Industrial Relations	1.00	.70	.00	.30	.70	.70	.20	.80	.60	.50

¹ TABLE I represents a portion of EXHIBIT I taken from Hemphill's, "Job Descriptions for Executives," Harvard Business Review, 1959.

² For a description of these dimensions, see pages 12-15 of this thesis

IV. MODIFICATION OF HEMPHILL'S QUESTIONNAIRE

Hemphill's 191 item questionnaire was designed and worded primarily for executive managers of private organization in mind. In order to fit his questionnaire more closely into the Navy environment, certain wording in several items were changed and items which were felt to be irrelevant to naval officers were omitted. For example, replacing the word "company" with "unit", "budget" with "OPTAR" and "branch" with "department" in certain items was an attempt to align the questionnaire more closely with Navy wording. Thirty-seven items of the 191 items were omitted. These thirty-seven items were involved with marketing, sales, and labor contract negotiations. It was felt that these items were irrelevant to the naval officers' jobs to be sampled and their response to these items would be zero on the 0 to 7 point scale. The effect on the results of omitting those thirty-seven items from the questionnaire should be none, since a zero response would have no bearing on the particular dimension being calculated. Appendix A contains the modified questionnaire and scoring scheme which was sent to Naval Communications Management Officers.

In order to develop a scoring key for each of the dimensions, it was necessary to compare the items on the modified questionnaire with those of Hemphill's original study. Both positive and negative valued items were identified for each dimension. Appendix B gives a list of those items which apply to the ten dimensions.

V. APPROACH AND PRELIMINARY ANALYSIS

A. SELECTION OF PARTICIPANTS

The first step involved in determining the job dimensions of Naval Communications Managers was to select those individuals who would be asked to complete the questionnaire. The first approach considered was to send the questionnaire to all those officers involved in any way with communications. This would include Communications Management P-Coded billets (P-Code 9310), major staffs, ashore and afloat, down to Communications Officers on ships and in aircraft squadrons. This approach was rejected primarily because of the lower organizational levels of such respondents. At the squadron and ship Communications Officer level the individual filling that billet is primarily involved with actual communications operations. (Communications operations referring to the delivery, receipt and accounting for all message traffic to and from his command.) The second approach considered was to develop the general guidelines for participation and then develop from these guidelines more specific guidelines (i.e., which type-commands and which staffs). An existing study of Communications Management P-Coded billets, and a review of the objectives of the Communications Management Curriculum, as taught at the Naval Postgraduate School, ultimately provided the general guidelines for selecting the participants.

The Naval Postgraduate School Catalogue [1970-1972] states the objectives as, "to provide instruction to officers who will perform as Communications Managers of communication systems or as Communications Officers in large commands and staffs, afloat and ashore." Using these

objectives as a basic guideline, and the Standard Naval Distribution List for the proper mailing address, a list was established which included major staffs, afloat and ashore, all Naval Communications Stations and 9310 Communications Management P-Coded billets. A total of 195 individuals were sent questionnaires. Appendix C contains a listing of those commands and positions to which a questionnaire was sent.

B. RESPONSES TO THE QUESTIONNAIRE

Each respondent to the questionnaire was asked to choose from one of eight alternative responses for each of the 154 items. This allowed the position incumbent to specify to what extent each item applied to his job. Appendix A includes a copy of the questionnaire and associated response scales.

The response rate to the questionnaire was very good. Out of the 195 questionnaires mailed, 114 were completed and returned, yielding a 59% return of the questionnaire. (Appendix C shows those commands and position which returned questionnaires.) Only one respondent indicated that the task survey had been deficient as a vehicle for describing his billet.

C. ANALYSIS OF THE DATA

Once the data had been collected, the first step in the analysis process was determining the score of each individual on the ten dimensions developed by Hemphill. Using the scoring keys listed in Appendix B, a raw score was computed by taking the algebraic sum of the weighted (+1 or -1) to the items on each individual's job on each of the ten dimensions.

The next step involved the grouping of the individuals' data into groups representing similar commands, or areas of performance. This was done so that the dimensions of alike jobs and similar type jobs could be determined from group data rather than from a single individual in one particular job. The different groupings and the numbers of respondents in the groups were³:

1. Operational Shore Commands - Consisted of 41 responses from Naval Communications Stations. For analysis purposes this group was subdivided into:

A. Commanding Officers	15 respondents
B. Executive Officers	10 respondents
C. Operations/Communications	16 respondents

2. Major Shore Staffs

A. COMNAVCOM	30 respondents
B. OP941	6 respondents

3. Miscellaneous Shore Staffs 30 respondents

4. Miscellaneous Sea Staffs 7 respondents

5. Rank

A. Captain	9 respondents
B. Commander	43 respondents
C. LCDRs	62 respondents

6. P-Coded Billets

A. Commanders	14 respondents
B. LCDRs	16 respondents

The next step was the calculation of a mean score and a standard deviation on each dimension for each of the twelve groupings. To compute the means and standard deviations, the condscriptive routine of

³ Groups 1A, B, and C, 2A and B, 3 and 4 are mutually exclusive and represent all 114 respondents. Other groupings are not mutually exclusive.

the Statistical Package For The Social Sciences Program [1970] was used. These results are shown on TABLE II.

D. CLUSTER ANALYSIS OF THE DATA

The final step in the analysis of the data was the clustering of jobs based on the already determined ten dimensions. The problem was to attempt to partition the set of multivariate observations (114 observations, each scored on ten dimensions) into a set of clusters such that the clusters were dissimilar from one another and observations within any given cluster were similar to one another.

To determine the cluster group the Multivariate Iterative K-means Cluster Analysis Program was used. This program developed by McRae [1970] partitions a $n \times p$ (n observations on p variables) data matrix into disjoint clusters of observations, by optimizing, in an iterative improvement fashion, one of four objective criteria, and one of three distance functions.

An example of how the program operates was provided by McRae [1970]. Data were collected on 150 samples consisting of three types of irises. Of the three types, 50 were Iris Setosa, 50 were Iris Versicolour, and 50 were Iris Virginica. The data consisted of measurements on four variables (sepal length, sepal width, petal length, and petal width). The cluster analysis program was given information as to the number of observations (150), the number of variables (4), and an initial guess as to the number of clusters (3). The Minimum /W/ objective criterion (minimizing within cluster variance) and Mahalanobis distance options were used.

The final cluster solution to this problem was: all Iris Setosa were grouped in cluster 2; cluster 3 contained 49 Iris Virginica and

TABLE II
Mean and Standard Deviation for Each Dimension for Each of The Twelve Groups^I

GROUPS	DIMENSIONS										
	A	B	C	D	E	F	G	H	I	J	
Commanding Officer (N=15)	* -7.6	18.3	10.9	12.1	-3.9	6.0	7.1	10.7	-14.5	4.7	
	** 9.3	5.5	16.1	5.3	12.4	10.0	8.8	7.5	7.9	5.6	
Executive Officer (N=10)	* -2.9	15.8	13.0	11.4	0.7	6.9	14.1	5.3	-3.9	4.2	
	** 5.5	6.5	10.0	5.9	10.2	7.2	8.6	9.5	12.1	5.9	
Ops/Comm Officer (N=16)	* -8.5	20.7	15.2	16.2	10.9	1.9	6.2	-1.3	1.6	-1.8	
	** 8.9	6.9	11.9	4.7	8.1	10.4	7.6	8.0	7.5	6.1	
COMNAVCOM (N=30)	* 13.7	12.8	-0.2	11.1	-3.1	3.8	6.7	-2.8	4.5	-3.7	
	** 13.5	8.8	8.0	5.7	6.9	10.0	10.0	11.0	6.8	7.7	
OP-941 (N=6)	* 21.0	9.3	2.0	12.8	-5.0	0.0	12.7	1.7	9.3	1.2	
	** 12.0	11.8	11.1	4.4	7.6	3.5	7.6	6.1	9.8	8.5	
Misc. Shore (N=30)	* 10.3	19.6	5.9	11.3	-0.3	-0.6	7.5	-2.2	2.9	-1.7	
	** 10.4	4.9	10.2	5.5	40.5	7.2	9.3	8.3	8.9	8.1	
Misc Sea (N=7)	* 12.3	19.6	3.7	11.3	4.0	-2.0	10.6	-5.7	4.1	-5.3	
	** 5.7	6.0	11.6	5.0	10.6	12.2	2.6	8.1	7.6	4.6	
Captains (N=6)	* 3.6	15.9	6.0	11.8	-4.3	7.8	8.8	9.7	-2.6	1.1	
	** 12.3	7.6	10.2	6.3	7.1	9.7	7.4	9.3	11.7	7.8	
Commanders (N=43)	* 3.6	16.7	4.4	12.7	-2.1	5.8	10.4	2.5	-1.9	0.6	
	** 15.4	8.3	12.5	5.7	10.2	9.2	9.3	9.2	12.5	7.4	
Lieutenant Commanders (N=62)	* 7.0	17.4	7.8	12.1	-1.9	-0.9	6.3	-3.5	-2.7	-3.2	
	** 14.2	8.1	12.4	5.6	33.1	8.7	8.6	9.8	8.0	7.2	
P-Code Commanders (N=14)	* -1.9	19.1	10.1	12.8	-4.5	5.3	13.5	4.5	-4.8	2.9	
	** 9.8	6.3	13.9	6.1	13.2	8.9	8.1	9.2	13.0	5.4	
P-Code LCDRs (N=16)	* 4.8	15.4	7.5	12.6	-5.6	0.1	8.7	-2.8	3.4	0.9	
	** 18.7	10.9	13.9	5.0	8.3	8.8	6.9	9.4	7.4	8.5	
All (N=114)	* 5.7	16.9	6.6	12.3	-2.9	2.4	8.1	0.1	-0.7	-0.9	
	** 14.3	7.7	12.1	5.5	22.2	9.3	8.9	10.0	10.4	7.7	
* Arithmetic mean											
** Standard Deviation											

^I For a description of the dimensions see pages 12 - 15 of this thesis.

2 Iris Versicolour; cluster 1 contained 48 Iris Versicolour and 1 Iris Virginica. The computer solution reproduced the flower types accurately except for three flowers.

In developing the job clusters, the objective criteria used, in McRae's notation, was to minimize trace W (minimize within cluster variance) with the Mahalanobis distance function to be used to compute the distances. The data consisted of 114 observations with ten variables (dimensions) for each observation. The number of clusters to use was not known, therefore, it became necessary to arbitrarily choose an initial number of clusters. A thorough review of the characteristics of the individual respondents revealed that the logical number of a priori clusters to use would be six. The rationale used in guessing that there should be six clusters was as follows. It was felt that the data from the P-Coded respondents would cluster together, and that the data from the non-P-Coded respondents would tend to form five clusters: line jobs, staff jobs, and three rank clusters (Capt, CDR, LCDR).

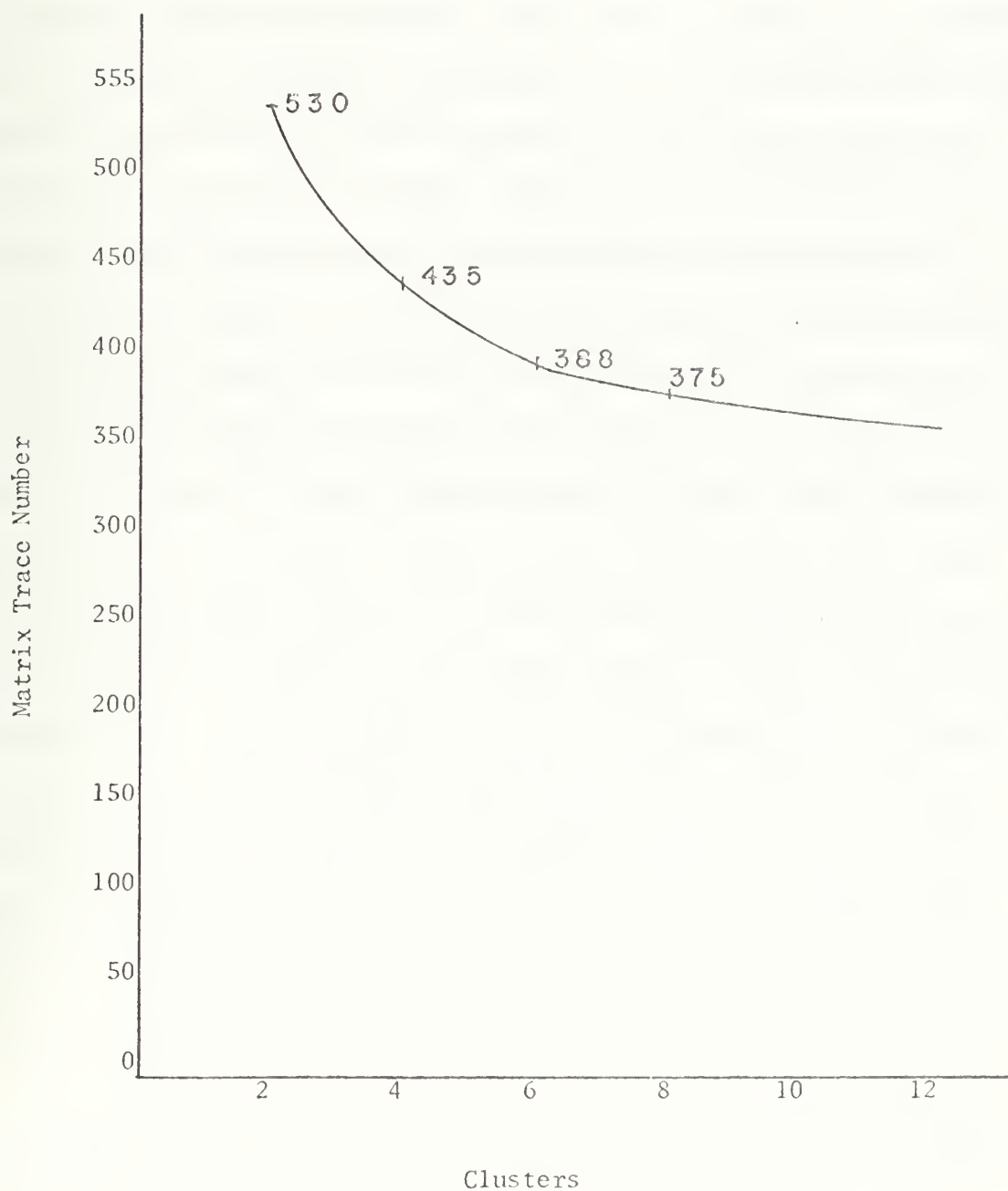
To further substantiate the choice of six clusters as the number to use, a plot of the within-clusters matrix trace was used, using several program runs, with different numbers of clusters being formed on each run. By plotting the within-clusters matrix trace vs the number of clusters, it was hoped to find the minimum number of clusters which would best describe the data. This minimum number would be the point on the graph where an increase in the number of clusters would not substantially decrease the within-cluster matrix trace. This procedure substantiated the original choice of six clusters, as shown in FIGURE 1.

FIGURE 1

Plot of Within-Clusters Matrix Trace

vs

Number of Clusters



VI. RESULTS

It can be seen from examining TABLE II to what extent each dimension was involved in each incumbent's job. Commanding Officer, executive officer, and operations/communications officer groups all scored negatively on Providing a Staff Service (Dimension A) while the incumbents of COMNAVCOM, OP941, miscellaneous shore and sea staffs scored positively.⁴ On Supervision of Work (Dimension B), all seven groups scored high positive, indicating they were involved with the planning, organizing and controlling the work of others. On Business Control (Dimension C), all groups with the exception of the COMNAVCOM group scored positive. The commanding officer, executive officer, and operations/communications officer groups scored high positive on this dimension indicating that they exercise a high degree of business control in their jobs. On the Technical Aspects of Products (Dimension D), all seven groups scored high positive, indicating a concern for activities in technical areas. On (Dimension E) Human Affairs, all groups scored negative with the exception of executive officers and miscellaneous sea staff. On Planning (Dimension F) commanding, executive, operations/communication officer groups as well as the COMNAVCOM group scored positively. The miscellaneous shore and sea staffs scored slightly negative, while on the average, the OP941 staff groups were zero. All seven groups received positive scores on the Exercise of Broad Power and Authority (Dimension

⁴ Positive and negative scores can occur on each of the dimensions due to Hemphill's factor-analytic based scoring scheme. If the reader finds negative scores hard to use, he can add some positive constant to all scores, as these are not ratio-scaled data.

G). This indicates that the incumbents exercise broad power and have final authority in a number of areas. They also make use of staff people, interpret policy, and are concerned with capital expenditures. On Business Reputation (Dimension H), commanding officer, executive officer and OP941 groups scored positive. The commanding officer group scored high positive indicating a greater concern for the reputation of the unit than did other respondent groups. On this dimension the operations/communications officer, COMNAVCOM, miscellaneous shore and sea groups scored negatively. On Personal Demands (Dimension I), all groups, with the exception of commanding and executive officer groups, scored positive, indicating their jobs place stringent demands on their personal behavior. Incumbents scoring positive on this dimension tend to operate at the high staff levels. On the final dimension, Preservation of Assets (Dimension J), commanding officers, executive officers, and OP941 groups scored positive, indicating that the preservations of units' assets is a part of their job. The remaining groups scored negatively indicating this dimension was not of great importance in their jobs

In addition to the seven major groups, the average score on each dimension was also calculated for each rank and for the P-Coded job incumbents. Again, referring to TABLE II, scores for each dimension are also shown for Captains, Commanders, LCDRs and P-Coded LCDRs. For the rank of Captain the average score on each dimension, with the exception of the Human Affairs and Personal Demands (Dimensions E and I), were positive. For Commanders the same positive and negative patterns existed. The average scores for Commanders on all dimensions were positive, except for Dimensions E and I. For the LCDR rank, positive scores were found for the Staff Services, Supervisors of Work, Business Control,

Technical Products, Broad Powers and Personal Demands dimensions. Negative scores were computed for Human Affairs, Planning, Business Reputation and Preservation of Assets dimensions. P-Coded Commanders scored negatively on three dimensions: Providing a Staff Service, Human Affairs, and Personal Demands. For P-Coded LCDRs the Human Affairs and Business Reputation dimensions were the only ones receiving negative scores.

The final results covered in TABLE II come from considering the 114 responses together. The average score for this combined group on each of the ten dimensions was positive for all dimensions except for Human Affairs and Preservation of Assets.

To facilitate comparisons of the mean scores for each dimension in TABLE II to the norms developed by Hemphill for civilian executives, TABLE III was formed. TABLE III shows the scores corresponding to each of the nine stanine categories in Hemphill's civilian executive norms. The fifth stanine category represents a one-quarter standard deviation on either side of the mean (on a normally distributed curve). Half standard deviation units are marked off in both directions from these points, to get stanine categories one through four and six through nine. Of the total observations, 20% will fall within stanine category five, 17% in stanine categories four and six, 12% in categories three and seven, 7% in categories two and eight, and 4% in categories one and nine.⁵

Comparison of the scores in TABLES II and III showed that all but COMNAVCOM, OP941, Miscellaneous Shore, Miscellaneous Sea and Operations/

⁵ If the reader is interested in further investigation into stanines (standard-nine-division scale), refer to: Tyler, L.E., The Psychology of Human Differences, p. 139-141, Appleton-Century-Crafts, Inc., 1956.

TABLE III

Scores Corresponding to Each of Nine Stanine Categories
Based on a Norm Group of 93 Executive Positions ¹

Dimension	Stanine																	
	1	2	3	4	5	6	7	8	9									
A	--	-47	-46	-28	-27	-10	-9	9	10	27	28	46	47	65	66	83	84	--
B	--	-52	-51	-29	-28	-6	-5	18	19	41	42	64	65	88	89	111	112	
C	--	-47	-46	-27	-26	-8	-7	11	12	30	31	50	51	69	70	88	89	
D	--	-69	-68	-46	-45	-22	-21	1	2	25	26	48	49	72	73	95	96	
E	--	-59	-58	-41	-40	-23	-22	-5	-4	14	15	32	33	50	51	69	70	
F	--	-51	-50	-32	-31	-13	-12	7	8	26	27	45	46	65	66	84	85	
G	--	-25	-24	-9	-8	7	8	24	25	40	41	56	57	72	73	88	89	
H	--	-39	-38	-23	-22	-7	-6	9	10	25	26	41	42	58	59	74	75	
I	--	-63	-62	-47	-46	-31	-30	-16	-14	1	2	17	18	33	34	50	51	
J	--	-40	-39	-24	-23	-8	-7	9	10	25	26	41	42	57	58	74	75	

¹ From, Hemphill, J.K., *Dimensions of Executive Positions: A Study of the Basic Characteristics of the Positions of Ninety-three Executives*, Educational Testing Service, 1959, p. 71.

Communications officer groups fell within stanine categories four and five. The exceptions fell within stanine category six for Dimension I, Personal Demands. It was determined, from comparing the mean scores for Naval Communications Managers with the stanine scores for civilian executives, that approximately 50% of the civilian executives scored higher on all dimensions than did Naval Communications Managers. At the other end of the distribution, approximately 25% of the executives scored lower than the averages obtained from the Naval Communications Managers.

A further review of Hemphill's study [1959], revealed those executive positions which scored high on each of the dimensions. For example, Assistant Treasurer, Assistant General Purchasing Agent and Director of Personnel Services scored high on Dimension A. On Dimension B, Manager, Manufacturing Accounting Unit; Manager of Manufacturing and Section Supervisors scored high. On Dimension C, Business Control, the Budget Administrator, Division Manager, Plant Manager, and Operations Manager scored high. Technical Concerns with Products, Dimension D, Division Director of Research, Vice President (Sales) and Engineering Section Managers scored high. Incumbents scoring high on this dimension were concerned with the development of new business and changes in demand or products or services. They utilize professional training in their work and give technical advice to others. On Community and Social Affairs (Dimension E), General Managers (Retail Division), Regional Managers, and Plant Managers scored high. On Dimension F, Assistant Vice President (Engineering), Manager (Retail Sales Staff), Section Supervisor (Research Division) and Chief (Process Engineering Division) scored high. For Dimension G, Exercise of Broad Power and Authority, incumbents in positions such as: Assistant Vice President, Personnel, Vice President

for Manufacturing, General Sales Manager, and General Manager of a Division, had high scores. On Business Reputation (Dimension H), Plant Manager, District Traffic Manager, and Employment Manager are a few who had high scores. On Dimension I, Director of Purchase, Budget Administrator, Vice President (Manufacturing) and Controller scored high. For the last dimension, Preservation of Assets, Vice President (Manufacturing), Advertising and Sales Promotion Manager, Assistant Treasurer, and Vice President (Purchases and Traffic) scored high. For reference to the kinds of tasks performed by incumbents scoring high in the dimensions, refer to pages 12 through 15 of this thesis. It was felt that by reviewing those civilian executive positions which scored high on the dimensions, better insight and comparison could be made between them and military personnel scoring high on similar dimensions.

The scores obtained from the 114 officers responding to this survey can also be compared to the scores obtained by Seiler, et al [1972], for destroyer and submarine Commanding Officers, Executive Officers and Department Heads.

From examination of TABLE IV, which shows the mean dimension scores by ship type, it was determined that Commanding Officers scored low on Providing a Staff Service (Dimension A) and Personal Demands (Dimension I). On Dimension B, C, D, F, G, and H, Supervision of Work, Internal Business Control, Technical Aspects of Products, Long-range Planning, Exercise of Broad Power and Authority, and Business Reputation respectively, Commanding Officers scored high. Examination of Executive Officers revealed that on Providing a Staff Service (Dimension A), submarine Executive Officers scored very high while destroyer Executive

TABLE IV
MEAN DIMENSION SCORES BY POSITION AND SHIP TYPE ¹

DIMENSIONS											
A	B	C	D	E	F	G	H	I	J		
Commanding Officers	DD	-17.3	17.0	16.5	14.0	-3.8	15.8	16.3	7.8	-10.0	2.0
Commanding Officers	SS	-9.0	19.0	10.5	14.0	-1.0	9.0	13.0	13.0	-14.9	7.5
Executive Officers	DD	-0.5	19.3	6.5	12.7	2.7	2.3	6.0	-1.1	-2.7	3.3
Executive Officer	SS	20.0	20.0	-3.5	7.5	-8.0	0.0	12.0	1.0	-1.5	12.5
Department Head	DD	3.6	22.8	15.0	10.0	-11.0	-1.1	2.2	-3.6	1.1	1.4
Department Head	SS	5.7	19.4	9.2	9.1	-13.2	-6.1	2.5	-1.4	5.5	2.3
DD Destroyer											
SS Submarine											

¹ Table from Seiler, M.E., Stoakes, R.B., and Pewett, R. H., Dimensions of Naval Officers Shipboard Positions, paper presented at U.S. Naval Postgraduate School, Monterey, California, 5 June 1972.

Officers scored slightly negative. Both destroyer and submarine Executive Officers scored high on Dimensions B, D, and G, Supervision of Work, Technical Aspects of Products, and Exercise of Broad Power and Authority, respectively. Department heads scored low on Human, Community and Social Affairs (Dimension E). Both scored high on Supervision of Work (Dimension B), Internal Business Control (Dimension C) and Technical Aspects of Products (Dimension D).

Comparison of TABLE II and TABLE IV showed a similarity in positive and negative scores for Commanding Officers of destroyers and submarines with Commanding, Executive and Operations/Communications Officer groups. A similarity also existed between Executive Officers and Department Heads of destroyers and submarines to the COMNAVCOM, OP-941, Miscellaneous Shore and Miscellaneous Sea groups.

Examination of the standard deviation for each dimension (see TABLE II) revealed there was a wide spread among the job incumbents' scores on the dimensions. The magnitudes of the standard deviations in TABLE II seem to indicate that the jobs, even when put into logical groupings, are quite different from one another. When the scores of all 114 respondents were considered together and standard deviations on the dimensions computed, the highest and lowest standard deviations were on Dimensions E (Community and Social Affairs) and D (Technical Concerns with Products), respectively.

Thus, on the ten dimensions measured, the 114 jobs were most homogeneous on Dimension D (Technical Concerns with Products) and most heterogeneous on Dimension E (Community and Social Affairs).

With little agreement among the scores from the incumbents of the different groups, the next step was to attempt to cluster together jobs

having similar scores. As was previously explained, six was determined to be the minimum number of clusters best describing the original data set. Appendix D lists the billets in each of the six clusters.

TABLE V shows the break down of each cluster into the seven major organizational groups, and TABLE VI shows the mean for each dimension for each of the six clusters. Using these data in TABLE V, it was observed that clusters 1, 3 and 6 had a clear separation between line and staff commands.⁶ In cluster 5, of the nineteen respondents, fifteen were in line commands, while the remaining four were in staff commands. The break between line and staff command was not as great in clusters 2 and 4. The split of P-Coded billets ranged from a low of 3% in cluster 2 to a high of 33% in cluster 4. There were no clusters which contained a majority of any of the ranks.

TABLE VII-A through TABLE VII-F show the percentage in each cluster of P-Coded and non-P-Coded billets by rank within the seven groups. The data in these tables further substantiates the data in TABLE V by showing that P-Coded billets don't form a predominant percentage in any single cluster.

It was hoped that after grouping jobs into one of the six clusters, a certain characteristic would be found to be in common among all the jobs in any one cluster. For example, it was hoped that billets requiring designated communications managers, P-Code 9310, would fall into the same cluster. As the data in TABLES V and VII clearly indicate, no particular characteristics were predominant in any cluster. However, four of the clusters (1, 3, 5 and 6) were separated into line and staff

⁶ Line commands are represented by Commanding, Executive and Operations/Communications Officer groups, while staff commands are represented by the COMNAVCOM, OP941, Miscellaneous Shore and Miscellaneous Sea groups.

TABLE V
Job Incumbents in the Six Clusters

LINE	CLUSTERS					
	1	2	3	4	5	6
Commanding Officers (N=15)	--	3	4	2	6	--
Executive Officers (N=10)	--	1	1	6	2	--
Ops/Comm Officers (N=16)	--	1	--	8	7	--
STAFF						
COMNAVCOM (N=30)	8	8	--	7	--	7
OP--941 (N=6)	2	--	--	1	--	3
Misc Shore (N=30)	14	1	--	9	4	2
Misc Sea (N=7)	3	1	--	3	--	--
* P-Code (N=30)	6	1	2	10	8	3
* CAPT (N=9)	1	4	1	2	1	--
* CDR (N=43)	6(2)	9(1)	4(2)	13(3)	7(6)	4
* LCDR (N=62)	20(4)	2	--	21(7)	11(2)	8(3)

()=No. of P-Coded officers
of that total number.

*These groupings are not mutually exclusive from the above seven groupings.

TABLE VI

Arithmetic Mean of Each Dimension for the Six Clusters¹

	DIMENSIONS									
	A	B	C	D	E	F	G	H	I	J
CLUSTER 1	1.1	1.5	0.1	0.7	-0.1	-0.2	0.6	-0.7	0.2	-0.1
CLUSTER 2	0.5	0.9	0.0	1.0	-0.1	0.9	0.7	0.5	0.1	-0.1
CLUSTER 3	-0.6	1.2	-0.4	0.6	0.9	1.4	0.6	1.0	-0.8	-0.0
CLUSTER 4	-0.1	1.3	0.8	0.7	-0.4	-0.1	0.6	0.2	0.3	-0.0
CLUSTER 5	-0.6	1.8	2.1	1.1	-0.7	0.3	0.4	0.1	-0.6	0.1
CLUSTER 6	2.4	0.2	-0.2	0.3	0.1	0.2	0.3	-0.1	0.3	-0.3

¹ For a description of these dimensions, see pages 12-15 of this thesis.

TABLE VII A

Percentage Break Down of Incumbents in Each Cluster,
by P-Code vs Non-P-Code, Rank and Line vs Staff,
for Each Command¹

CLUSTER 1

N=27

LINE		P-Code Rank			Non-P-Code Rank		
		CAPT	CDR	LCDR	CAPT	CDR	LCDR
	Commanding Officers						
	Executive Officers						
	Ops/Comm Officers						
STAFF	COMNAVCOM						
	OP-941		4%	4%		6%	16%
	Misc Shore		4%	4%			
	Misc Sea				4%	6%	42%
				6%			4%

Total=100%

TABLE VII B

CLUSTER 2

N=15

LINE		P-Code Rank			Non-P-Code Rank		
		CAPT	CDR	LCDR	CAPT	CDR	LCDR
	Commanding Officers				6.6%	13%	
	Executive Officers		6.6%				
	Ops/Comm Officers						6.6%
STAFF	COMNAVCOM				20%	27%	6.6%
	OP-941						
	Misc Shore					6.6%	
	Misc Sea					6.6%	

Total=99.6%
(round-off error)

¹ A Percentage entry in a table is the percentage of the number of observations in that cluster coming from that category, e.g. P-coded Commanders in OP-941.

TABLE VII C

CLUSTER 3

N=5

LINE		P-Code Rank			Non-P-Code Rank		
		CAPT	CDR	LCDR	CAPT	CDR	LCDR
	Commanding Officers		20%		20%	40%	
	Executive Officers		20%				
	Ops/Comm Officers						
STAFF	COMNAVCOM						
	OP-941						
	Misc Shore						
	Misc Sea						
							Total=100%

TABLE VII D

CLUSTER 4

N=36

LINE		P-Code Rank			Non-P-Code Rank		
		CAPT	CDR	LCDR	CAPT	CDR	LCDR
	Commanding Officers		2.8%			2.8%	
	Executive Officers		2.8%	2.8%		10.8%	
	Ops/Comm Officers			17%			5.5%
STAFF	COMNAVCOM				5.5%	5.5%	8.4%
	OP-941		2.8%				
	Misc Shore					5.5%	19.5%
	Misc Sea					2.8%	5.5%
							Total=100%

TABLE VII E

CLUSTER 5

N=19

LINE		P-Code Rank			Non-P-Code Rank		
		CAPT	CDR	LCDR	CAPT	CDR	LCDR
	Commanding Officers		5%		5%	10%	10%
	Executive Officers		10%				
	Ops/Comm Officers		23%				16%
STAFF	COMNAVCOM						
	OP-941						
	Misc Shore			5%			16%
	Misc Sea						
							Total=100%

TABLE VII F

CLUSTER 6

N=12

LINE		P-Code Rank			Non-P-Code Rank		
		CAPT	CDR	LCDR	CAPT	CDR	LCDR
	Commanding Officers						
	Executive Officers						
	Ops/Comm Officers						
STAFF	COMNAVCOM					33%	25%
	OP-941			25%			
	Misc Shore						17%
	Misc Sea						
							Total=100%

type functions, with clusters 1 and 6 totally representing staff commands, and clusters 3 and 5 primarily consisting of individuals in line commands.

As was mentioned above, the results indicated that six clusters was the optimal number to form, but it was considered of interest to see what would happen when only two clusters were formed. Would, for instance, the P-Coded billets go into the same cluster and all the other billets group in the other cluster? The results of a computer run in which two clusters were formed (by minimizing within group variance) are shown in TABLES VIII-A & B.

The data in TABLES VIII-A & B show that the clusters were not based on a P-Coded non-P-Coded distinction. In fact, the only a priori classification distinction that seems to explain the clustering is that of line-function vs staff function. Cluster 1 consists of almost only staff billets, while cluster 2 tends to be populated somewhat more by line billets than by staff billets.

In conclusion, it must be noted that the hard empiricism of cluster analysis does not support the administratively important distinctions such as P-Coded vs non-P-Coded, Captain vs Commander, and so on. The world of communications officers' billets doesn't appear to be organized the way that the Navy thinks it is.

TABLE VIII A

Percentage Break Down of Incumbents into Two Clusters

CLUSTER 1

LINE		N=51					
		P-Code Rank			Non-P-Code Rank		
		CAPT	CDR	LCDR	CAPT	CDR	LCDR
STAFF	Commanding Officers		4%			2%	
	Executive Officers						
	Ops/Comm Officers						
	COMNAVCOM		4%		5%	20%	20%
	OP-941		2%	8%			
	Misc Shore				2%	5%	20%
	Misc Sea			4%		2%	2%
							Total=100%

TABLE VIII B

CLUSTER 2

LINE		N=63					
		P-Code Rank			Non-P-Code Rank		
		CAPT	CDR	LCDR	CAPT	CDR	LCDR
STAFF	Commanding Officers		3.2%		4.8%	9.5%	3.2%
	Executive Officers		6.3%	1.6%		6.3%	
	Ops/Comm Officers		4.8%	10.0%			9.5%
	COMNAVCOM				3.2%	3.2%	1.6%
	OP-941		1.6%				
	Misc Shore						
	Misc Sea			1.6%		3.2%	21.0%
						1.6%	3.2%
							Total=100%

VII. SUMMARY AND CONCLUSIONS

The purpose of this thesis was to determine and describe the jobs performed by Naval officers serving in Naval Communications Management type billets. To accomplish this task a questionnaire developed by Hemphill [1959] was used. Hemphill gathered responses by 93 executives to items on a 193 item questionnaire. These items were grouped together by means of factor analysis to form ten dimensions of an executive's job. The ten dimensions described some, but not all, of the functions performed by the 93 civilian executives.

In order to apply Hemphill's questionnaire to the study of Naval Communications Managers it was necessary to modify it slightly. Word-ing within items was changed to conform to Naval language and a few items which were felt to be irrelevant to Naval officers were omitted.

The modified questionnaire was sent by mail to 195 Naval officers who were performing in Naval Communications type billets. One hundred fourteen questionnaires were returned with only one respondent commenting that he felt the survey was deficient.

The analysis of the data was done in two parts. First, a raw score for each of the ten dimensions was determined for each respondent to the questionnaire. The scores were then grouped into seven major categories which were:

1. Commanding Officer - Naval Communications Station
2. Executive Officer - Naval Communications Station
3. Operation/Communications Officer - Naval Communications Station
4. COMNAVCOM - Staff
5. OP941 - Staff
6. Miscellaneous Shore Staff
7. Miscellaneous Sea Staff

Arithmetic mean dimension scores were computed for each of the seven categories. The second method of analysis was to attempt to partition the set of multivariate observations into a set of clusters such that the clusters were dissimilar from one another and observations within any given cluster were similar to one another.

Comparison of the mean scores on each dimension for Naval Communications Management officers with mean scores for civilian executives, computed by Hemphill, revealed that approximately 50% of the civilian executives scored higher on the dimensions than did Naval Communications Officers. Comparing the scores of Commanding Officer, Executive Officer, and Department Heads of destroyers and submarines with Communications Management Officers revealed some similarities. Destroyer and submarine Commanding Officers scored very similar to Commanding, Executive and Operations/Communications Officer groups, while Executive Officers and Department Heads scores were similar to those of COMNAVCOM, OP941, Miscellaneous Shore and Miscellaneous Sea groups.

Cluster analysis of the data revealed that billets didn't cluster along expected lines, such as the P-Coded/non-P-Coded distinction, or along rank groupings. In fact, the only a priori classification distinction between clusters that seemed to be reflected in the results was that of line-function vs staff function.

There are several applications which this approach to job analysis offers within Naval Communications. First, by analysing Naval Communications Managers jobs, a redefinition of Communications Management, P-Coded billets could be developed. This would allow for identification of those billets which are similar to one another in job content and are felt to be important enough to be classified as P-Coded billets.

Second, managerial development paths/ladders could be established for the training and development of Communications Management talent. Third, by better understanding of the jobs an individual performs, better performance evaluations would be possible. Fourth, this method could be used between a superior and his subordinate to define those areas and activities which the subordinate is expected to perform. Used for this purpose, the questionnaire offers an excellent means of setting objectives and at the same time reducing misunderstandings.

In general, the "executive position description" questionnaire could provide many advantages to the Navy. It is a valuable tool which could be used by management to replace guesswork with dependable information on the characteristics of executives' work.

APPENDIX A

GENERAL INTRODUCTION AND INSTRUCTIONS

A. What is the purpose of the questionnaire?

The Executive Position Description questionnaire is to be used to determine the basic characteristics of executive positions. The questionnaire provides a method for analyzing executive positions in a manner which will reveal their similarities and differences more adequately than has been possible before.

B. Who may use the questionnaire?

This questionnaire is to be completed by the incumbents of executive positions. An executive position is regarded as one which entails responsibility for supervising someone who also is a supervisor. Thus, the questionnaire is concerned with management positions at and above the second line.

C. Identification of the Position.

Please complete the questionnaire for the position you now hold. On the answer sheet please record the organization level, official title of the position to which you are responding and if you consider your position as lower, middle or upper management.

D. How is the questionnaire to be completed?

As you consider each item you are to proceed in two steps: First, consider whether the item applies to or is true for your position. If your answer is "NO", then the item is definitely not a part of your position. Second, and only if the item does apply or is true for your position, you must then decide how significant a part of your position it represents. In making this decision you are to consider and weigh its importance, frequency of occurrence, relevance, or any other factor which you think determines to what extent the item is part of the position. You are to allot a value between 0 and 7 to each item according to the following schema.

0. Definitely not a part of the position, does not apply.
1. Under unusual circumstances may be a minor part of the position.
- 2.
- 3.
4. A substantial part of the position.
- 5.

6.

7. A most significant part of the position.

Please record your answers on the answer sheet at the back of the questionnaire.

E. PLEASE DO NOT OMIT ITEMS.

F. RETURN ONLY THE ANSWER SHEET.

PART I POSITION ACTIVITIES

AN INDIVIDUAL IN THIS POSITION WOULD:

1. Plan the analysis of quantitative data.
2. Forecast the volume of work to be done in the near future.
3. Schedule work so that it flows evenly and steadily.
4. See representatives of institutional investors.
5. Nominate key personnel in the organization for promotion.
6. Make assignments of jobs to subordinates.
7. Submit regular reports concerning accomplishment of groups of employees.
8. Write or dictate at least 25 letters per week.
9. Verify important facts before they become part of a record.
10. Edit drafts of special reports.
11. Make speeches at public gatherings.
12. Sign documents that obligate the unit to the extent of at least \$1,000.
13. On the average spend at least one hour per day completing routine paper work.
14. Approve transfers of personnel from one job to another.
15. Keep detailed and accurate records.
16. Advise junior persons on technical matters related to the unit.

17. Make analyses of statistical reports.
18. Approve the introduction of new products or services.
19. Have a public speaking engagement at least as often as once every six months.
20. Be involved in establishing objectives for the unit.
21. Set OPTAR objectives.
22. Justify capital expenditures.
23. Make suggestions for improvements in performance and/or services
24. Appraise the results of operations.
25. Anticipate new and/or changed demands for performance and/or services.
26. Serve on a committee concerned with appraisal of performance.
27. Compute the costs of attaining objectives and/or rendering services.
28. Set OPTAR objectives for operating groups.
29. Review reports on inventory.
30. Analyze expense items involving a gross of at least \$5,000.
31. Furnish guidance to others in the preparation of budgets.
32. Analyze regularly the effectiveness of operations.
33. Review budgets for operations.
34. Establish effective expense controls.
35. Supervise a team of specialists.
36. Represent the CO outside the unit.
37. Analyze operating performance reports.
38. Devise procedures to properly reflect the results of operations.
39. Trouble-shoot special problems as they arise.
40. Plan the best use of available facilities.
41. Explain divergence between budget and actual expenditures.

42. Make use of staff people.
43. Consolidate estimates from various sources.
44. Evaluate records of performance.
45. Secure facts and information for others.
46. Serve as a member of one or more committees concerned with unit policy.
47. Set goals for future performance.
48. Serve as a consultant in work with departments of the unit.
49. Brief others on the contents of reports, letters, etc.
50. Appraise the results of operations.
51. Define areas of responsibility for supervisory personnel.
52. Serve as a consultant in the interpretation of data and/or information.
53. Keep a constant check upon the activities of subordinates.

PART II POSITION RESPONSIBILITIES

AN INDIVIDUAL IN MY POSITION MUST BE CONCERNED WITH:

54. Long-range objectives of the organization.
55. Optimum return on resources of the unit.
56. Preservation of unit's assets.
57. OPTAR expenditures.
58. Payment of salary and/or wages.
59. Selection of new personnel.
60. Definition of areas of responsibility of supervisory personnel.
61. Payment of unit obligations.
62. Forecasting future trends or events.
63. Preparation and circulation of bulletins and reports.

64. Development of new procedures.
65. Enforcement of rules and regulations.
66. Control of inventories.
67. Preservation of the unit's non-combat security.
68. Personnel incentives.
69. Preparation of standards and/or specifications.
70. Reduction of costs.
71. Promotion of the unit's capabilities.
72. Proper handling of other than personal monies.
73. Compliance of practices with state and federal laws.
74. Delivery schedules.
75. Coordination of certain activities of many subdivision of the unit.
76. Loss of the unit's money and/or property.
77. Acceptance of the unit in the community.
78. Unit's commitments that are difficult to meet.
79. Activities of unit competitors.
80. Long-range solvency of the unit.
81. Personnel attitude surveys
82. Personnel leave policies.
83. What activities the unit is to be engaged in.
84. Long-range trends in management thinking.
85. Control of unit performance.
86. Industrial relations.
87. Opportunities to promote the unit before the public.
88. New procedures.
89. Over-or-under staffing of jobs.
90. Maintenance of proper inventories.

91. Engineering standards.
92. The long-range potentialities of the unit.
93. The effectiveness of a force of 100 or more people.
94. Proposed regulations that might affect the unit.
95. Pilot projects.
96. Sizing up people.
97. Evaluating new ideas.
98. Redesign of procedures to reduce costs.
99. Quality control.
100. Goodwill of the unit in the community.
101. Efficiency of operations.
102. Preparation of quarterly (or more frequent) reports on operations.
103. Development of management trainees.
104. Human relations practices.
105. Consolidation of data and/or information from numerous sources.

PART III POSITION DEMANDS AND RESTRICTIONS

MY POSITION REQUIRES THAT I:

106. Be active in community affairs.
107. Avoid identification with political elements that others consider radical.
108. Even during most relaxed social occasions, avoid deviation from generally accepted behavior.
109. Maintain membership in one or more clubs/professional groups.
110. Keep informed about the latest technical developments in a professional area.
111. Avoid the use of any kind of profanity.

112. Be very careful to avoid inadvertent disclosure of confidential information.
113. Spend as much as 50 hours per week on the job.
114. Take a leading part in local community projects.
115. Work with persons whose interest conflict with the demands of my position.
116. Sit at a desk at least 20 hours per week.
117. Be capable of performing the jobs of all subordinates.
118. Participate in outside activities to increase the prestige of the unit.
119. Gain the respect of very important persons.
120. Work with information of questionable reliability.
121. Maintain membership in two or more professional organizations.
122. Present the unit to the public in its best light.
123. Avoid publicity associated with personal difficulties.
124. Refrain from being seen at a place (bar, club, etc.) having other than the highest repute.
125. Maintain active membership in two or more professional organizations.
126. Get to know each person under me.
127. Be an active member of at least one civic organization.
128. Refrain from public criticism of the unit's operations.
129. Make decisions without consulting others.

PART IV POSITION CHARACTERISTICS
(Miscellaneous)

MY POSITION:

130. Signifies membership in top or middle management.
131. Offers an opportunity to utilize professional training.
132. Involves dealing with persons within the organization of substantially higher rank.

133. Assures that the incumbent will be noticed by top management.
134. Is within the normal path of promotion to higher levels.
135. Offers an opportunity to work with the more influential people within the community.
136. Allows great freedom of action.
137. Involves very frequent contact with the public.
138. Involves maintaining the highest respect of a few important persons.
139. Involves first-hand contact with machines and their operations.
140. Offers an opportunity to gain experience in management.
141. Involves the "goodwill" of the unit.
142. Involves meeting problems produced by factors over which I have no control.
143. Allows me to make decisions that are not subject to review.
144. Provides an opportunity for actually managing an important part of the unit.
145. Provides a Navy vehicle for my use.
146. Entitles me to my own yeoman.
147. Involves many regularly assigned duties.
148. Directly affects the quality of the unit's performance or service.
149. Involves spending at least 10 hours per week in direct associations with superiors.
150. Involves very few routine activities.
151. Involves activities that are not closely supervised or controlled.
152. Provides an office that is located in one of the most desirable areas.
153. Is considered a staff rather than a line position.
154. Involves working under constant pressure to meet deadlines.

ANSWER SHEET

Official Title of the position _____

Organization Level _____

This position is considered to be a, lower/middle/upper, level management position. (circle one)

Scoring Scheme:

0. Definitely not a part of the position, does not apply.

1.

2.

3.

4. A substantial part of the position.

5.

6.

7. A most significant part of the position.

1. _____	23. _____	45. _____	67. _____	89. _____	111. _____	133. _____
2. _____	24. _____	46. _____	68. _____	90. _____	112. _____	134. _____
3. _____	25. _____	47. _____	69. _____	91. _____	113. _____	135. _____
4. _____	26. _____	48. _____	70. _____	92. _____	114. _____	136. _____
5. _____	27. _____	49. _____	71. _____	93. _____	115. _____	137. _____
6. _____	28. _____	50. _____	72. _____	94. _____	116. _____	138. _____
7. _____	29. _____	51. _____	73. _____	95. _____	117. _____	139. _____
8. _____	30. _____	52. _____	74. _____	96. _____	118. _____	140. _____
9. _____	31. _____	53. _____	75. _____	97. _____	119. _____	141. _____
10. _____	32. _____	54. _____	76. _____	98. _____	120. _____	142. _____
11. _____	33. _____	55. _____	77. _____	99. _____	121. _____	143. _____
12. _____	34. _____	56. _____	78. _____	100. _____	122. _____	144. _____
13. _____	35. _____	57. _____	79. _____	101. _____	123. _____	145. _____
14. _____	36. _____	58. _____	80. _____	102. _____	124. _____	146. _____
15. _____	37. _____	59. _____	81. _____	103. _____	125. _____	147. _____
16. _____	38. _____	60. _____	82. _____	104. _____	126. _____	148. _____
17. _____	39. _____	61. _____	83. _____	105. _____	127. _____	149. _____
18. _____	40. _____	62. _____	84. _____	106. _____	128. _____	150. _____
19. _____	41. _____	63. _____	85. _____	107. _____	129. _____	151. _____
20. _____	42. _____	64. _____	86. _____	108. _____	130. _____	152. _____
21. _____	43. _____	65. _____	87. _____	109. _____	131. _____	153. _____
22. _____	44. _____	66. _____	88. _____	110. _____	132. _____	154. _____

APPENDIX B

Items which apply to each of the ten dimensions.

<u>Dimensions</u> ¹	<u>Items</u>
A+	5, 6, 59, 116, 117, 126, 132, 153
A-	21, 32, 33, 37, 41, 50, 89, 93
B+	24, 32, 37, 39, 40, 89, 101, 139
B-	20, 64, 71, 88
C+	31, 32, 33, 70, 72, 76, 90
C-	4, 11, 19, 36, 109, 137, 150
D+	7, 25, 43, 64, 78
D-	68, 82
E+	5, 87, 96, 100, 106, 109, 114, 119
E-	12, 27, 57, 69, 70, 85, 99, 137
F+	54, 80, 83, 84, 86, 110, 150
F-	13, 15, 29, 53, 66, 117
G+	42, 130, 133, 134, 140, 144
G-	102, 107, 110, 115, 118, 120, 125, 154
H+	64, 74, 122, 141, 142, 148, 151
H-	1, 10, 17, 26, 48, 52, 102, 110
I+	28, 108, 113, 119, 149, 153
I-	3, 40, 77, 87, 100, 122, 137, 145
J+	8, 12, 56, 57, 113
J-	18, 25, 35, 123, 128

¹ A plus (+) sign means the item response is added with the other responses to form an overall score on the dimension. A minus (-) sign means the response is subtracted from the other responses to form an overall score on the dimension.

APPENDIX C

Questionnaire Mailing List

Questionnaires were sent to Communications Officers of the following staffs:

1. *Commander-in-Chief, U.S. Pacific Fleet
2. Commander-in-Chief, U.S. Atlantic Fleet
3. *Commander-in-Chief, U.S. Naval Forces, Europe
4. *Commander, First Fleet
5. *Commander, Second Fleet
6. Commander, Sixth Fleet
7. *Commander, Seventh Fleet
8. Commander, Naval Air Forces, U.S. Pacific Fleet
9. Commander, Naval Air Forces, U.S. Atlantic Fleet
10. *Commander, Amphibious Forces, U.S. Pacific Fleet
11. Commander, Amphibious Forces, U.S. Atlantic Fleet
12. Commander, Cruiser-Destroyer Forces, U.S. Atlantic Fleet
13. Commander, Cruiser-Destroyer Forces, U.S. Pacific Fleet
14. Commander, Mine Warfare Forces, U.S. Navy
15. Commander, Service Force, U.S. Pacific Fleet
16. *Commander, Service Force, U.S. Atlantic Fleet
17. Commander, Submarine Force, U.S. Pacific Fleet
18. Commander, Submarine Force, U.S. Atlantic Fleet
19. *Commander, Training Command, U.S. Pacific Fleet
20. *Commander, Training Command, U.S. Atlantic Fleet
21. *Commander, Eastern Sea Frontier

22. Commander, Hawaiian Sea Frontier
23. *Commander, Caribbean Sea Frontier
24. FIRST Naval District Sector Commander, Headquarters, FIRST NAVAL DISTRICT
25. THIRD Naval District Sector Commander, Headquarters, THIRD NAVAL DISTRICT
26. Flag Administrative Unit, Commander-in-Chief, U.S. Pacific Fleet
27. *Flag Administrative Unit, Commander-in-Chief, U.S. Pacific Fleet
27. *Flag Administrative Unit, Commander-in-Chief, U.S. Atlantic Fleet
28. Flag Administrative Unit, Commander Fleet Air, Hawaii
29. *Flag Administrative Unit, Commander Naval Air Forces, U.S. Pacific Fleet
30. Flag Administrative Unit, Commander Naval Air Forces, U.S. Atlantic Fleet
31. Flag Administrative Unit, Commander Service Force, U.S. Pacific Fleet
32. *Commander, Naval Air Reserve Forces
33. *Commandant, 1st Naval District
34. *Commandant, 6th Naval District
35. *Commandant, 15th Naval District
36. Commandant, 9th Naval District
37. *Commandant, 8th Naval District
38. Commandant, 3rd Naval District
39. *Commandant, 5th Naval District
40. *Commandant, 14th Naval District
41. *Commandant, 4th Naval District
42. Commandant, 11th Naval District
43. *Commandant, 12th Naval District
44. Commandant, 10th Naval District
45. Commandant, 13th Naval District

46. Commandant, Naval District, Washington D.C.
47. Commander, Fleet Air, Alameda
48. *Commander, Fleet Air, Argenta
49. Commander, Fleet Air, Azores
50. Commander, Fleet Air, Adak
51. *Commander, Fleet Air, Bermuda
52. *Commander, Fleet Air, Caribbean
53. *Commander, Fleet Air, Mediterranean/Commander Antisubmarine Warfare Forces U.S. Sixth Fleet
54. *Commander, Fleet Air, Jacksonville
55. Commander, Fleet Air, Jacksonville Representative, Key West
56. Commander, Fleet Air, Hawaii
57. *Commander, Fleet Air, Keflavik
58. Commander, Fleet Air, Lemoore
59. Commander, Fleet Air, Moffett
60. *Commander, Fleet Air, Miramar
61. *Commander, Fleet Air, Quonset/Commander Hunter Killer Force, U.S. Atlantic Fleet
62. *Commander, Fleet Air, Whidbey
63. Commander, Fleet Air, Patuxent
64. Commander, Fleet Air, San Diego
65. Commander, Fleet Air, Western Pacific
66. *Commander, Cruiser-Destroyer Flotilla 2
67. Commander, Cruiser-Destroyer Flotilla 3
68. *Commander, Cruiser-Destroyer Flotilla 4
69. Commander, Cruiser-Destroyer Flotilla 6
70. Commander, Cruiser-Destroyer Flotilla 8
71. *Commander, Cruiser-Destroyer Flotilla 9

72. *Commander, Cruiser-Destroyer Flotilla 11

73. Commander, Cruiser-Destroyer Flotilla 12

The following 13 addresses were various departments within Chief of Naval Operations (OP-94).

74. OP-941H1 Assistant

75. *OP-941D2 Head Fleet Program Unit

76. OP-941D1F Assistant Program Appraisal

77. OP-941G4 Head Surface and Shore Command

78. OP-941C2 Head Policy Standard Plans

79. *OP-941B1 OPNAV Communications Officer

80. *OP-941C1E Headquarters System World-Wide Plans

81. OP-941D2C Head Programming Unit

82. *OP-941C2D1 Fleet Communications Program Review Section

83. OP-941C1D CONUS-WEST Plans

84. *OP-941C2D Head Policy and Strategic Plans Unit

85. OP-941H2 Assistant

86. *OP-941P1 Program Appraisal FBMC3

The following addresses were within the Naval Communications Command.

87. NO1 Deputy Commander

88. *NO1B Assistant Deputy Commander

89. *NO13 Inspector General

90. *NO15 Assistant for Command MIS

91. *NO153 Director Management Information Center

92. N1 Assistant Commander Management, Administration and Manpower Department.

93. N1B Deputy Assistant Commander Management, Administration and Manpower Department

94. N11 Director Headquarters Administration Management, Administration and Manpower Department

95. *N14 Director Manpower Management Division
96. N15 Director Training Requirements
97. *N15A Assistant Director Training Requirements
98. N2 Assistant Commander Plans Programs and Requirements Department
99. N2B Deputy Assistant Plans Programs and Requirements Department
100. *N2D Assistant, Force Related Programs and Requirements
101. *N22 Director Functional Plans and Plans/Programs Coordination Division
102. N22B Deputy Director Functional Plans and Plans/Programs Coordination Division
103. N3 Assistant Commander Operations and Readiness Department
104. N3B Deputy Assistant Operations and Readiness Department
105. *N33 Director, Doctrine, Proc. and Publications
106. *N34 Director Operations, Readiness Contingency and Emergency Communications Division
107. *N422 Headquarters, System Applications Branch
108. *N43 Director, Material Requirements Division
109. *N4 Assistant Commander, Material Requirements and Readiness Department
110. *N41 Director Fleet Material Readiness Division
111. N42 Director, Shore Material Readiness Division
112. N6 Assistant Commander, Frequency Management Department
113. N6B Deputy Assistant, Frequency Management Department
114. *N61 Director, Frequency Allocation Electronic Assignments Space Planning Division
115. *N62 Director, Frequency Authority Communications Assignments Registrations Division
116. *N63 Director, Frequency Data Support Usage Analysis and Propagation Division
117. *N64 Director, Electromagnetic Comp Division
118. *N7 Assistant Commander Communications Systems Planning Department

- 119. *N7B Deputy Assistant, Communications System Planning Department
- 120. *N7T Technical Advisor, Communications System Planning Department
- 121. *N72 Director, System Planning and Coordination Division
- 122. *N74 Director, System R and D Division
- 123. *N76 Director, Communications Automation Division
- 124. *N764 System Development Branch
- 125. *N77 Director, Satellite Communications Program Coordinator
- 126. *N77B Deputy Director, Satellite Communications Program Coordinator
- 127. *N771B Assistant Fleet Satellite Communications Coordinator
- 128. *N7712 TACSATCOM/JCS Actions
- 129. *N7721 Headquarters DSCS Branch
- 130. N141 Head, Military Manpower Plans Branch
- 131. *Commanding Officer Naval Communications Station, Adak
- 132. *Executive Officer Naval Communications Station, Adak
- 133. *Commanding Officer U.S. Naval Communications Station, Asmara
- 134. Executive Officer U.S. Naval Communications Station, Asmara
- 135. *Operations/Communications Officer U.S. Naval Communications Station, Asmara
- 136. *Commanding Officer U.S. Naval Communications Station, Harold E Holt
- 137. Executive Officer, U.S. Naval Communications Station, Harold E Holt
- 138. *Operations/Communications Officer U.S. Naval Communications Station, Harold E Holt
- 139. Commanding Officer Naval Communications Station, Washington
- 140. Executive Officer Naval Communications Station, Washington
- 141. *Operations/Communications Officer Naval Communications Station, Washington
- 142. *Commanding Officer U.S. Naval Communications Station, Guam
- 143. *Executive Officer U.S. Naval Communications Station, Guam
- 144. *Operations/Communications Officer U.S. Naval Communications Station, Guam

- 145. Commanding Officer U.S. Naval Communications Station, Iceland
- 146. *Executive Officer U.S. Naval Communications Station, Iceland
- 147. Operations/Communications Officer U.S. Naval Communications Station, Iceland
- 148. Commanding Officer Naval Communications Station, Key West
- 149. *Executive Officer Naval Communications Station, Key West
- 150. *Operations/Communications Officer Naval Communications Station, Key West
- 151. *Commanding Officer U.S. Naval Communications Station, Londonderry
- 152. *Executive Officer U.S. Naval Communications Station, Londonderry
- 153. *Operations Officer/Communications Officer U.S. Naval Communications Station, Londonderry
- 154. *Commanding Officer U.S. Naval Communications Station, Italy
- 155. Executive Officer U.S. Naval Communications Station, Italy
- 156. Operations Officer/Communications Officer U.S. Naval Communications Station, Italy
- 157. Commanding Officer U.S. Naval Communications Station, Greece
- 158. *Executive Officer U.S. Naval Communications Station, Greece
- 159. *Operations/Communications Officer U.S. Naval Communications Station, Greece
- 160. *Commanding Officer U.S. Naval Communications Station, Newport
- 161. *Executive Officer U.S. Naval Communications Station, Newport
- 162. *Operations/Communications Officer U.S. Naval Communications Station, Newport
- 163. *Commanding Officer US Naval Communications Station, Norfolk
- 164. Executive Officer U.S. Naval Communications Station, Norfolk
- 165. *Operations/Communications Officer U.S. Naval Communications Station, Norfolk
- 166. *Commanding Officer U.S. Naval Communications Station, Puerto Rico
- 167. Executive Officer U.S. Naval Communications Station, Puerto Rico
- 168. *Operations/Communications Officer, U.S. Naval Communications Station, Puerto Rico

169. *Commanding Officer U.S. Naval Communications Station, Spain
170. Executive Officer U.S. Naval Communications Station, Spain
171. *Operations/Communications Officer U.S. Naval Communications Station, Spain
172. *Commanding Officer U.S. Naval Communications Station, San Diego
173. Executive Officer U.S. Naval Communications Station, San Diego
174. *Operations/Communications Officer U.S. Naval Communications Station, San Diego
175. Commanding Officer U.S. Naval Communications Station, Philippines
176. *Executive Officer U.S. Naval Communications Station, Philippines
177. *Operations/Communications Officer U.S. Naval Communications Station, Philippines
178. *Commanding Officer U.S. Naval Communications Station, Morocco
179. Executive Officer U.S. Naval Communications Station, Morocco
180. *Operations Officer/Communications Officer U.S. Naval Communication Station, Morocco
181. *Commanding Officer U.S. Naval Communications Station, San Francisco
182. Executive Officer U.S. Naval Communications Station, San Francisco
183. *Operations /Communications Officer U.S. Naval Communications Station, San Francisco
184. Commanding Officer U.S. Naval Communications Station, Honolulu
185. *Executive Officer U.S. Naval Communications Station, Honolulu
186. Operations/Communications Officer U.S. Naval Communications Station, Honolulu
187. Commanding Officer U.S. Naval Communications Station, Japan
188. Executive Officer U.S. Naval Communications Station, Japan
189. *Operations/Communications Officer U.S. Naval Communications Station, Japan
190. *CAMS Officer US Naval Communication Station, San Francisco
191. CAMS Officer U.S. Naval Communication Station, Guam
192. AUTODIN Officer U.S. Naval Communications Station, Guam

- 193. *Officer-in-Charge, U.S. Naval Communications Unit, Christchurch
- 194. *Officer-in-Charge U.S. Naval Communications Technical Group, Rio
- 195. *Executive Officer U.S. Naval Communications Station, Balboa

NOTE: Asterisk (*) indicates those individuals who responded to the
Questionnaire.

APPENDIX D

List of Respondents By Cluster

CLUSTER 1

1. N0153 Director Management Information Center, COMNAVCOM
2. N1 Assistant Commander Management, Administration and Manpower Department, COMNAVCOM
3. N2D Assistant, Force Related Programs and Requirements Department, COMNAVCOM
4. N41 Director, Fleet Material Readiness Division, COMNAVCOM
5. N61 Director, Frequency Allocation Electronic Assignment Space Planning Division, COMNAVCOM
6. N64 Director Electromagnetic Comp Division, COMNAVCOM
7. N77B Deputy Director, Satellite Communications Program Coordinator, COMNAVCOM
8. N771B Assistant Fleet Satellite Communications Coordinator, COMNAVCOM
9. OP941B1 OPNAV Communications Officer
10. OP941C1E Head, System World-Wide Plans
11. Communications Officer, Commander-in-Chief U.S. Pacific Fleet
12. Communications Officer, Amphibious Forces, U.S. Pacific Fleet
13. Communications Officer, Training Command, U.S. Pacific Fleet
14. Communications Officer, Commander Caribbean Sea Frontier
15. Communications Officer, Flag Admin Unit, Commander-in-Chief U.S. Pacific Fleet
16. Communications Officer, Commandant 6th Naval District
17. Communications Officer, Commandant 15th Naval District
18. Communications Officer, Commandant 5th Naval District
19. Communications Officer, Commandant 4th Naval District
20. Communications Officer, Commander Fleet Air, Argentina

CLUSTER 1 (Continued)

21. Communications Officer, Commander Fleet Air, Caribbean
22. Communications Officer, Commander Fleet Air, Mediterranean/Commander Antisubmarine Warfare Forces U.S. Sixth Fleet
23. Communications Officer, Commander Fleet Air, Keflavik
24. CAMS Officer, U.S. Naval Communications Station, San Francisco
25. Communications Officer, Cruiser-Destroyer Flotilla 2
26. Communications Officer, Cruiser-Destroyer Flotilla 9
27. Communications Officer, Cruiser-Destroyer Flotilla 11

CLUSTER 2

1. Commanding Officer, U.S. Naval Communications Station, Italy
2. Commanding Officer, U.S. Naval Communications Station, Spain
3. Commanding Officer, U.S. Naval Communications Station, Morocco
4. Executive Officer, U.S. Naval Communications Station, Iceland
5. Operations/Communications Officer, Naval Communication Station, San Francisco
6. N01B Assistant Deputy Commander, COMNAVCOM
7. N33 Director, Doctrine, Proc and Publications
8. N34 Director Operations Readiness Contingency and Emergency Communications Division, COMNAVCOM
9. N4 Assistant Commander, Material Requirements and Readiness Department, COMNAVCOM
10. N7 Assistant Commander Communications Systems Planning Department, COMNAVCOM
11. N7B Deputy Assistant, Communications Systems Planning Department, COMNAVCOM
12. N76 Director, Communications Automation Division, COMNAVCOM
13. N7721 Headquarters D3CS Branch, COMNAVCOM
14. Communications Officer, Commander-in-Chief U.S. Naval Forces Europe
15. Communications Officer, Commander First Fleet

CLUSTER 3

1. Commanding Officer, U.S. Naval Communications Station, Asmara
2. Commanding Officer, U.S. Naval Communications Station, Harold E. Holt
3. Commanding Officer, U.S. Naval Communications Station, Londonderry
4. Commanding Officer, U.S. Naval Communications Station, San Diego
5. Executive Officer, U.S. Naval Communications Station, Philippines

CLUSTER 4

1. Commanding Officer, U.S. Naval Communications Station, Guam
2. Commanding Officer, U.S. Naval Communications Station, Norfolk
3. Executive Officer, U.S. Naval Communications Station, Balboa
4. Executive Officer, U.S. Naval Communications Station, Guam
5. Executive Officer, U.S. Naval Communications Station, Key West
6. Executive Officer, U.S. Naval Communications Station, Greece
7. Executive Officer, U.S. Naval Communications Station, Newport
8. Executive Officer, U.S. Naval Communications Station, Honolulu
9. Operations/Communications Officer, U.S. Naval Communications Station, Asmara
10. Operations/Communications Officer, U.S. Naval Communications Station, Washington
11. Operations/Communications Officer, U.S. Naval Communications Station, Londonderry
12. Operations/Communications Officer, U.S. Naval Communications Station, Greece
13. Operations/Communications Officer, U.S. Naval Communications Station, Newport
14. Operations/Communications Officer, U.S. Naval Communications Station, Spain
15. Operations/Communications Officer, U.S. Naval Communications Station, San Diego

CLUSTER 4 (Continued)

16. Operations/Communications Officer, U.S. Naval Communications Station, Japan
17. N013 Inspector General, COMNAVCOM
18. N22 Director Functional Plans and Plans/Programs Coordination Division, COMNAVCOM
19. N422 Headquarters, System Applications Branch
20. N63 Director, Frequency Data Support Usage Analysis and Propagation Division, COMNAVCOM
21. N764 System Development Branch
22. N77 Director, Stellite Communications Program Coordinator, COMNAVCOM
23. N7712 TACSATCOM/JCS Actions, COMNAVCOM
24. OP941P1 Program Appraisal FBMC3
25. Communications Officer, Commander Service Force, U.S. Atlantic Fleet
26. Communications Officer, Commander Training Command, U.S. Atlantic Fleet
27. Communications Officer, Flag Admin Unit, Commander-in-Chief U.S. Atlantic Fleet
28. Communications Officer, Commandant 1st Naval District
29. Communications Officer, Commander Fleet Air, Bermuda
30. Communications Officer, Commandant 14th Naval District
31. Communications Officer, Commander Fleet Air, Jacksonville
32. Communications Officer, Commander Fleet Air, Miramar
33. Communications Officer, Commander Hunter Killer Force U.S. Atlantic Fleet
34. Communications Officer, Commander Second Fleet
35. Communications Officer, Commander Seventh Fleet
36. Communications Officer, Cruiser-Destroyer Flotilla 4

CLUSTER 5

1. Commanding Officer, U.S. Naval Communications Station, Adak
2. Commanding Officer, U.S. Naval Communications Station, Newport
3. Commanding Officer, U.S. Naval Communications Station, Puerto Rico
4. Commanding Officer, U.S. Naval Communications Station, San Francisco
5. Officer-in-Charge, U.S. Naval Communications Technical Group, Rio
6. Officer-in-Charge, U.S. Naval Communications Unit, Christchurch
7. Executive Officer, U.S. Naval Communications Station, Adak
8. Executive Officer, U.S. Naval Communications Station, Londonderry
9. Operations/Communications Officer, U.S. Naval Communications Station, Harold E. Holt
10. Operations/Communications Officer, U.S. Naval Communications Station, Guam
11. Operations/Communications Officer, U.S. Naval Communications Station, Key West
12. Operations/Communications Officer, U.S. Naval Communications Station, Norfolk
13. Operations/Communications Officer, U.S. Naval Communications Station, Puerto Rico
14. Operations/Communications Officer, U.S. Naval Communications Station, Philippines
15. Operations/Communications Officer, U.S. Naval Communications Station, Morocco
16. Communications Officer, Eastern Sea Frontier
17. Communications Officer, Commandant Eighth Naval District
18. Communications Officer, Commander Fleet Air, Whidbey
19. AUTODIN Officer, U.S. Naval Communications Station, Guam

CLUSTER 6

1. N015 Assistant for Command MIS, COMNAVCOM
2. N15A Assistant Director Training Requirements, COMNAVCOM

CLUSTER 6 (Continued)

3. N43 Director, Material Requirements Division, COMNAVCOM
4. N62 Director for Frequency Authority Communications, Assignments Registrations Division, COMNAVCOM
5. N7T Technical Advisor, Communications Systems Planning Department, COMNAVCOM
6. N72 Director, System Planning and Coordination Division, COMNAVCOM
7. OP-941D2 Head Fleet Program Unit
8. OP-941C2D1 Fleet Communications Program Review Section
9. OP-941C2D Head Policy and Strategic Plans Unit
10. Communications Officer, Commander U.S. Naval Air Reserve Forces
11. Communications Officer, Commandant 12th Naval District
12. N74 Director Systems R and D Division

REFERENCES

1. Bent, D.H., Hull, C.H., and Nie, N., Statistical Package For The Social Sciences, McGraw Hill Co., 1970.
2. Campbell, J.P., and others, Managerial Behavior, Performance, and Effectiveness, McGraw Hill, 1970.
3. Carlson, S., Executive Behavior: A Study of the Work Load and Working Methods of Managing Directors, Stromberg, 1951.
4. Dunnette, M.D., Personnel Selection and Placement, Wadsworth Publishing Co, Inc., 1966.
5. Flanagan, J.C., "Defining the Requirements of the Executive's Job," Personnel, v. 28, p. 28-35, July 1951.
6. Hemphill, J.K., Dimensions of Executive Position: A Study of the Basic Characteristics of the Positions of Ninety-three Business Executives, Educational Testing Service, 1959.
7. Hemphill, J.C., "Job Descriptions for Executives," Harvard Business Review, v. 37, p. 55-67, 1959.
8. Koontz, H., and O'Donnall, G., Principles of Management: An Analysis of Managerial Functions, McGraw Hill, 1972.
9. Lytle, C.W., Job Evaluation Methods, The Ronald Press Co., 1954.
10. McRae, D.J., MIKCA: A FORTRAN IV Iterative K-means Cluster Analysis Program, CTB/McGraw Hill, 1970.
11. Otis, J.L., Leukart, R.H., Job Evaluation, A Basic for Sound Wage Administration, Prentice-Hall, Inc., 1958.
12. Patton, J.A., Littlefield, C.L., and Self, S.A., Job Evaluations Text and Cases, Richard D. Irwin, Inc., 1964.
13. Seiler, M.E., Stoakes, R.B., and Pewett, R.H., Dimensions of Naval Officers Shipboard Positions, paper presented at U.S. Naval Postgraduate School, Monterey, California, 5 June 1972.
14. Tyler, L.E., The Psychology of Human Differences, Appleton-Century-Crafts, Inc., 1956.

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13. ABSTRACT			
<p>A study of Naval Officers assigned to Communications Management billets was conducted to determine job requirements of those billets. The "executive position description questionnaire" developed by Hemphill [1959] was used for the study.</p> <p>Analyses of data from 114 respondents to the questionnaire were conducted. Respondents were grouped into seven categories according to job type, and a mean score was computed for each of Hemphill's dimensions. Cluster analysis was used to develop six dissimilar clusters maximizing similarities among respondents within clusters.</p> <p>Cluster analyses revealed that jobs did not cluster along expected lines, such as P-Code vs non-P-Code. The only <u>a priori</u> distinction clearly reflected in the job clusters was line-function vs staff-function. A comparison of civilian executives to Communications Managers was also conducted. In general, the Communications Managers' jobs were below the 50th percentile on the civilian executive norms for these dimensions.</p>			

KEY WORDS

1. Communications management
2. Job dimensionality
3. Job analysis
4. Communications

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